

Soil Mechanics, Foundation Bearing Capacity and Slope Stabilization
Seminar Agenda
Salt Lake City, UT – March 26, 2015
Presented by Christopher T. Garriss, PE

8:30 – 10:30

Geotechnical Investigation

Properties of soil

- Importance of recognizing soil properties
- Formation of soils
- Soil types

Geotechnical/Geologic hazards

- Collapsible soil
- Expansive soils
- Seismic/Liquefaction
- Sensitive soils
- Landslides

Geotechnical investigation

- Site reconnaissance
- Exploration
 - Drilled borings
 - Test pits
- Laboratory testing
 - Soil index properties
 - Consolidation
- Establishing appropriate geotechnical scope of work
- Obtaining and reviewing geotechnical reports
- Cone penetration testing
- Shear wave velocity
- Shear strength

10:30-10:45

Break

10:45 – 12:15

Overview of General Soil Mechanics and Soil Behavior

Stress and failure in soils

Vertical soil stress

Lateral earth pressure

Compressibility

Drained and undrained shear strength

Seismic effects

- Dynamic increase to lateral earth pressure
- Instantaneous loads

Liquefaction

- Differential settlement
- Lateral spread displacement
- Post-earthquake instability

12:15-1:15

Lunch

1:15-2:45

Foundation Bearing Capacity

Types of foundations

Calculating bearing capacity

- Shallow foundations
- Deep foundations

Lateral resistance

Effects of drainage and compaction

Soil improvement

- Over-excavation and replacement
- Structural fill
- Geogrid reinforcement

Liquefaction effects and ground mitigation

2:45-3:00

Break

3:00-4:30

Overview of Slope Stability Evaluation and Improvement Concepts

Natural and engineered slopes

Landslides

Understanding slope failures

- Soil versus rock slope failure
- Cohesive/deep-seated slope failure
- Granular/shallow slope failure
- Impact of fissures

Slope stability analyses input

- Geologic conditions
- Subsurface soil and groundwater conditions
- Topography
- Proposed construction
- Shear strength
- Seismicity

Exploration, testing and instrumentation

Slope stabilization

- Methods
- Selection of stabilization method
- Alternatives to slope stabilization

